AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings of claims, in the application.

Listing of Claims

Claim 1 (currently amended): A method for the determination of a disease state in a human subject, said method comprising the steps of:

(a) measuring at least one optical property at a first area on a ~~body~~ part of an arm of said human subject to obtain a first set of data, said first area being subjected to a first temperature program;

(b) measuring at least one optical property at a second area on said ~~body~~ part of said arm to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said ~~body~~ part of said arm being morphologically similar to, adjacent to, but not substantially overlapping with said first area of said ~~body~~ part of said arm;

(c) inserting said first set of data and said second set of data into a mathematical relationship to calculate a mathematical output; and

(d) comparing said mathematical output to a category selector to determine said disease state of said human subject.

Claim 2 (original): The method of claim 1, wherein said optical properties are measured with light having a wavelength ranging from about 400 nm to about 2000 nm.

Claim 3 (original): The method of claim 1, wherein said optical properties are measured by a diffuse reflectance technique.

Claim 4 (original): The method of claim 1, wherein measuring steps (a) and (b) are performed simultaneously.

Claim 5 (original): The method of claim 1, wherein measuring steps (a) and (b) are performed sequentially.

Claim 6 (original): The method of claim 1, wherein said temperature programs employ temperatures ranging from about 10 °C to about 45 °C.

Claim 7 (original): The method of claim 1, wherein said disease state is selected from the group consisting of diabetic state, dermal disease state, neoplasmic disease state, and vascular disease state.

Claim 8 (currently amended): The method of claim 1, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

(a) providing a population comprising a sufficient number of human subjects to establish a category selector, said population comprising a first sub-population comprising a sufficient number of human subjects in said disease state and a second sub-population comprising a sufficient number of human subjects not in said disease state;

(b) for each of said number of human subjects in said population:

(1) measuring at least one optical property at a first area on a ~~body~~ part of an arm of each of said human subjects to obtain a first set of data, said first area being subjected to a first temperature program;

(2) measuring at least one optical property at a second area on said ~~body~~ part of said arm of each of said human subjects to obtain a second set of data, said second area on said part of said arm of each of said human subjects being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said ~~body~~ part of said arm of each of said human subjects being morphologically similar to, adjacent to, but not substantially

overlapping with said first area of said ~~body~~ part of said arm of each of said human subjects; and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said disease state.

Claim 9 (currently amended): A method for determining concentration of an analyte in a ~~body~~ part of an arm of a human subject, said method comprising the steps of:

(a) measuring at least one optical property at a first area on said ~~body~~ part of said arm to obtain a first set of data, said first area being subjected to a first temperature program;

(b) measuring at least one optical property at a second area on said ~~body~~ part of said arm to obtain a second set of data, said second area being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said ~~body~~ part of said arm being morphologically similar to said first area of said ~~body~~ part of said arm, said second area of said ~~body~~ part of said arm not substantially overlapping with said first area of said ~~body~~ part of said arm, and said second area of said ~~body~~ part of said arm being adjacent to said first area of said ~~body~~ part of said arm; and

(c) inserting said first set of data and said second set of data into a mathematical relationship to calculate said concentration of said analyte.

Claim 10 (original): The method of claim 9, wherein said optical properties are measured with light having a wavelength ranging from about 400 nm to about 2000 nm.

Claim 11 (original): The method of claim 9, wherein said optical properties are measured by a diffuse reflectance technique.

Claim 12 (original): The method of claim 9, wherein measuring steps (a) and (b) are performed simultaneously.

Claim 13 (original): The method of claim 9, wherein measuring steps (a) and (b) are performed sequentially.

Claim 14 (original): The method of claim 9, wherein said temperature programs employ temperatures ranging from about 10 °C to about 45 °C.

Claim 15 (currently amended): The method of claim 9, wherein said mathematical relationship of step (c) is derived by a method comprising the steps of:

(a) providing a population comprising a sufficient number of human subjects to establish a statistically meaningful mathematical relationship;

(b) for each of said number of human subjects in said population:

(1) measuring at least one optical property at a first area on said ~~body~~ part of said arm of each of said human subjects to obtain a first set of data, said first area being subjected to a first temperature program;

(2) measuring at least one optical property at a second area on said ~~body~~ part of said arm of each of said human subjects to obtain a second set of data, said second area of said ~~body~~ part of said arm of each of said human subjects being subjected to a second temperature program, said second temperature program being different from the first temperature program, said second area of said ~~body~~ part of said arm of each of said human subjects being morphologically similar to said first area of said ~~body~~ part of said arm of each of said human subjects, said second area of said ~~body~~ part of said arm of each of said human subjects not substantially overlapping with said first area of said ~~body~~ part of said arm of each of said human subjects, and said second area of said ~~body~~ part of said arm of each of said human subjects being adjacent to said first

area of said ~~body~~ part of said arm of each of said human subjects; and

(c) establishing a mathematical relationship between (i) said optical properties of said first set of data and said second set of data and (ii) said concentration of analyte.

Claim 16 (original): The method of claim 9, wherein said analyte is selected from the group consisting of glucose, hemoglobin, hematocrit value, tissue water content, urea, and billirubin.

Claim 17 (currently amended): An apparatus for determining a disease state of a human subject or concentration of an analyte in a ~~body~~ part of an arm of a human subject, said apparatus comprising:

(a) at least one source of light capable of illuminating at least two morphologically similar, adjacent, not substantially overlapping areas of said ~~body~~ part of said arm with light;

(b) at least one light collecting element to collect light re-emitted from said at least two areas of said ~~body~~ part of said arm;

(c) a detector for measuring the intensity of said re-emitted light collected at said two areas of said ~~body~~ part of said arm; and

(d) a controller for controlling the temperature of said at least two areas of said ~~body~~ part of said arm simultaneously by means of temperature programs.

Claim 18 (currently amended): The apparatus of claim 17, further including (e) a computer for correlating the intensity of the re-emitted light collected at said at least two areas of said ~~body~~ part of said arm with said concentration of an analyte or said disease state, provided that said at least two areas of said ~~body~~ part of said arm are morphologically similar, adjacent, and substantially non-overlapping.